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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,662	05/14/2001	Kazuyuki Shigeta	35.C15364	6820

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NEW YORK, NY 10112

EXAMINER

ABDULSELAM, ABBAS I

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 03/02/2004

15

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/853,662

Applicant(s)

KAZUYUKI

Examiner

Abbas I Abdulsalam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/09/04 has been entered.

2. Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-7, 9, 11-14, 21, 24-32 and 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloom et al. (USPN 6219015) in view of Miyashita et al. (USPN 6115084) and Hiller et al. (USPN 6590606).

Regarding claims 1, 5-6, 21, 24-26, 32 and 34-39, Bloom teaches a color display system including the use of modulators, which helps generate images that can be viewed directly or projected onto a viewing screen. Bloom also teaches a modulator (30) that can operate to

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modulate incident light and also teaches diffraction of red, green and blue spectral illumination from a white light (169). See col. 3, lines 28-32, col. 9, lines 10-41 and Fig (8-9). However, Bloom does not disclose a modulation means modulating a plurality of light beams according to the input display data. Bloom also does not disclose a white light illumination period per each interval between illumination periods for light beam having different colors, Miyashita on the other hand discloses a projection type display system including the use of three liquid crystal light valves for modulating colored light beams based on a given input video signals (col. 4, lines 49-55). Miyashita further teaches a projection type display system including an optical system in which the distance from the white light beam emitter for uniform illumination optical device to emitters (944, 945, 946) of the color light beams are equal. See col. 11, lines 52-56 and Fig. 19.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Bloom's multicolor optical image-generation system to adapt Miyashita's optical system as shown in Fig. 19. One would have been motivated in view of the suggestion in Miyashita that the optical system including the use of emitters (944, 945, 946) and light valves (925R, 925G, 925B) as configured in Fig. 19 equivalently provide the desired white light illumination period with respect to different colors, and modulation of plurality of light beams according to input data. The use of light valves and emitters helps the process of enlarging and projecting color light image onto a screen as taught by Miyashita.

Bloom has been discusses above. However, Bloom does not disclose, "illumination means for time sequentially illuminating the space modulation means with a plurality of light beams having different colors." Hiller on the other hand teaches modulators (2) of a light source (10) receiving video data "R, G, B", that can be brightness-modulated and color-modulated such

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that the time sequence of image points is controlled by the signal PCLK generated by a signal “DEF clock”, and the time sequence for line deflection as well as frame deflection is controlled by signals U.sub.G (t). See col. 29, lines 42-49 and Fig. 21

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bloom’s display system to adapt Hiller’s techniques of brightness and color modulations. One would have been motivated in view of the suggestion in Hiller that brightness modulation and color modulation along with time sequencing of the images as demonstrated in Fig. 21 are functionally equivalent to the desired illumination means. The use of brightness and color modulations helps achieve an arrangement for displaying video images as taught by Hiller.

Regarding claims 5-6, 25-26, 34-35 and 38-39, in addition to what has been discussed above, Bloom teaches the use of GLV in combination with other gratings (GLVs) where separate but contiguous red green and blue modulation unit of GLVs each with a grating period designed to diffract the appropriate color into a single optical system. See Fig. 7. Furthermore, Bloom discloses an optical system employing an array (160) of pixel unit (161) each including three sub pixel grating components (162, 164, 166) having different grating periods selected to diffract red green and blue spectral illumination from a white light. See Fig. 21. It would have obvious that the configurations of sub pixel components are the same as the desired configurations in a group containing boundary periods.

Regarding claims 7 and 27, Bloom teaches a visual display system by exploiting the white light to isolate the three primary color components of each pixel in a color display system. . See Fig 21

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Regarding claims 9 and 11-14, Bloom teaches the use of a modulator (30) including liquid crystal modulators, DMD-type devices and other types of modulators. See Fig (8-9)., col. 2, lines 17-22, col. 3, lines 10-19.

Regarding claims 28-31, Miyashita teaches a projection type display including a memory where at least video signals for pixels of one scanning lines are written and stored. See col. 4, lines 49-64.

Claims 2- 4, 8, 10, 15-20, 22-23 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloom et al., in view of Miyashita et al, Hiller et al. and Handschy (USPN 6317112).

Regarding claims 4 and 33, Bloom in view of Miyashita and Hiller has been discussed above. However, Miyashita does not teach “illumination means that has a white illumination period having a length corresponding to an illumination light transition period provided per each interval between illumination periods for the plurality of light beams having different colors, and the space modulation means repeats modulation twice during a signal period overlapping the white light illumination period, by using a same modulated signal for a white light gradation display having a length corresponding to an illumination light transition period to thereby set the signal period having a length twice the illumination light transition period.”

Handschy on the other hand teaches as shown in Fig 13, the ON/OFF state of all the pixel rows in the array (Fig. 4) for a period of time equal to one frame with the frame being divided into sub-frames for the purpose of obtaining color and each of the color sub-frames being divided into sub-sub-frames for the purpose of obtaining gray scale color. See col. 4, lines 40-47. and Fig. 14. In addition Handschy teaches the plurality of sub-periods of unequal length time

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and the time periods of the first plurality of sub-frames, if arranged in order of timewise, increase by a factor of two. Handschy further teaches that the sub-periods have illumination arrangement directing light of variable intensities into modulator arrangement. . See the abstract.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bloom's image generating system to adapt Handschy's method dividing frame and sub-frames with respect to various colors along with illumination arrangements. One would have been motivated in view of the suggestion in Handschy that divisions of a frame as configured in Fig. 14 along with the illuminations arrangement can be used to satisfy the desired illumination means. The use of illumination arrangements helps a system for producing spatially modulated color light as taught by Handschy.

Furthermore, Bloom teaches a modulation of white light to produce colored light as shown in Fig. 7. It would have been obvious to incorporate Bloom's white light in the system of Handschy's method of frame division described above.

Regarding claims 2-3, and 22-23, Handschy teaches the illumination arrangement directing light of different colors into the modulating arrangement during predetermined sub-periods of the period. See the abstract.

Regarding claims 8, 10 and 19-20, Handschy teaches the illumination output of spatial light modulator expressed in illuminator output versus time as shown in Fig. (16A-C).

Regarding claims 15-18, Handschy teaches the use of a color filter positioned within the illumination arrangement (16) such that it filters the light produced by the tungsten halogen bulb allowing light of a restricted range of wavelengths to pass into the spatial light modulator at any given time. See col. 7, lines 15-27, Fig. 1 and Fig. 2.

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### **Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following art is cited for further reference.

U.S. Pat. No. 6,259,492 to Imoto et al.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abdulsalam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

**Any response to this action should be mailed to:**

Commissioner of patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314**

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

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February 20, 2004

  
**XIAO WU**  
**PRIMARY EXAMINER**